

# Emerging Markets Portfolio Creating a Latin American Portfolio Peruvian Case Study

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The case study seeks to identify the most important issues encountered in developing a new portfolio in a Latin America country, exploring several alternatives which include not only stock and sovereign bonds but also more sophisticate products such as American Depositary Receipt (ADR) or Exchange Traded Fund (ETF) from emerging countries, and determine what are the risks involved in the process following not only Basil III standards, but also the local best practice recommend by the local regulators. The study at the beginning used historical information (normal distribution formulas) of several equities and bonds ( $n = 142$ ) and then selected five Peruvian instruments (one of this involved at least 25 equities,  $N = 5$ ,  $n = 30$ ) and then other 30 (one of this include an ETF,  $N = 30$ ,  $n = 55$ ) in order to determine the best return and risk combination for an emerging market portfolio. Besides, the additional objective is to examine and introduce the reader in some statistics formulas used in finance and risk management. Senior management must evaluate the issues associated with the new portfolio and strategy developed.

*Keywords:* portfolio theory, sovereign bonds, shares, ADRs, emerging markets, financial instruments

## Introduction

In the summer of 2011, Gabriela and Rosa were looking for a summer internship in New York City, after completing their first master degree study year in the United States. These were difficult times (June and July of 2011) because of the subprime mortgage crisis, while investment banks Lehman Brothers (in September, 2008) and Bear Stearns (in March 2008) had ceased operating in the international financial market. Regulatory changes and the economic stimulus from the United States government to its own financial system created sub-optimal conditions in the New York, Chicago, Tokyo, and London contract and investment financial markets. Mishkin (1996) defined a financial crisis as an alteration of financial markets where adverse selection and moral risks appear significantly, and financial markets are no longer to be the efficient funds channel towards the loci offering the best productive investment opportunities.

Also, these were times when emerging economies started to emerge as a clear specific option in the global

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economy. Not just the BRICS (Brazil, Russia, India, China, and South Africa), but also countries including Colombia, Chile, Turkey, and Peru became interesting destinations for investing in financial assets, both for the short term (exchange rate or interest rate) and for the long term (bonds or stock). Stock exchanges in those countries, their “stable” exchange rate and so-called “sovereign” government debt provided attractive options for investors, in view of their credit ratings’ likely improvement.

### **A Literature Review on Portfolio Processes**

Lane (1993) identified four necessary conditions for financial markets to enforce effective discipline. The first is an open and free market. Governments should follow the same market rules as any other public or private agent. Interest rates and insurance premiums paid by governments should reflect their solvency, to prevent situations of privilege characterized by artificially low interest rates or unlimited access to credits.

The second condition concerns transparency. It requires high quality budget financial data regarding government transactions and the involved agents, whether borrowers, lenders, or intermediaries.

Thirdly, market discipline forbids governments from accepting sub-central government debt (“no-bail-out” rule).

Finally, borrowers should be able to react to increases in interest rates or risk premiums (spreads) by reducing their demand for credit or debt issuances.

Kopits (2001, p. 15) hold that “transparency leads to successful fiscal policy, for the design of both rule-based and discretionary policies”.

Liquidity has been defined as “the ability to rapidly and cheaply transact large amounts of a given asset at any time” (Harris, 2003, p. 394), or the possibility of buying and selling an unlimited amount of a given stock (Lee, Petroni, & Shen, 2006).

In 1952, Harry M. Markowitz published a seminal research paper on Modern Portfolio Theory. He started by describing an individual or institutional investor with a given amount of money to invest at a given time for a certain period (the holding period). At the end of the period, the investor sells its holdings and then consumes or reinvests the proceeds or both (Sharpe, 1990).

Markowitz’ model assumes that the investors’ rational behavior when making decisions and choosing among investment instruments. Consequently, they will try to identify the optimum risk and performance relationship among the instruments comprised in the portfolio, as well as the amount to invest on each such component, so as to maximize returns without accepting an excessively high risk, thus meeting their specific interests and needs.

The Efficient Markets Theory is based on the Random Walk Theory. A random walk is that where future steps or directions cannot be forecast on the basis of past actions. When applying the term to capital markets, it means asset movements may not be predicted.

Minimum Variance Portfolio, in this Portfolio, the change in risk for an investment equals zero. Its main feature is that it “offers investors the minimum available risk for a set of assets that may make up an investment portfolio. To reach that portfolio, diversification is maximized and, consequently, a combination is achieved with the lowest risk level” (Rodríguez, 2005).

Optimum Portfolio, any of the portfolios found along the portfolio efficiency frontier, on the tangent point

with the Capital Markets Curve (CMC)<sup>1</sup>. The process proposed by Black (1972) and Merton (1973) concerned about an optimum portfolio to be identified by maximizing the slope of the curve linking the risk-free returns point and the efficiency frontier. When this maximum value is reached, the curve becomes the Capital Markets Curve.

### **Capital Markets in Latin America and Peru**

Presently in Latin America, the stock exchanges of Peru (Bolsa de Valores de Lima—BVL), Chile (Bolsa de Comercio de Santiago—BCS), and Colombia (Bolsa de Valores de Colombia—BVC) are coming together in the so-called Integrated Latin American Market (Mercado Integrado Latinoamericano—MILA) to transact stocks in a single market. Operations started in May 2011. These stock exchanges, according to the World Federation of Exchanges, rank among the most profitable worldwide. The purpose of the merger project, following integration and merger trends as in London and Toronto, or New York and Frankfurt, is to provide better conditions for investors in each market.

This integration will create Latin America's first largest stock market by the number of issuers, the second largest by the stock capitalization and the third by volume of trade. Remarkably, integrating the three stock exchanges will allow investors to create more diversified portfolios in more liquid markets. Issuers will benefit from better conditions for raising capital while commission takers and intermediaries will be able to create new products and expand the frontiers of their business, all under the oversight of local regulators.

Diversification will be geographic and by industry. The Peruvian, Colombian, and Chilean stock markets are present in various industries that have a potential for complementing each other. Peru's market is mainly focused on metals, including precious gold and silver, as well as zinc, and features major mining companies like Buenaventura, Hoschild, Volcan, and Milpo; the energy and oil industries are strong players in the Colombian market, including Ecopetrol, Pacific Rubiales, ISA, and Colinvertaciones, as well as financial organizations such as Bancolombia and Corficolombiana. The retail and financial industries have a strong presence in the Chilean market, including companies such as Falabella and Cencosud.

### **The Designed Portfolio**

This portfolio aims at creating a framework for reviewing the present potential of the Peruvian market to act efficiently in a developed capital market. The rationale behind the creation of this investment portfolio includes participation in traditional asset classes: fixed income and equity, in addition to the Exchange Traded Fund (ETF), which the researchers considered that, a stock market enhancer because of its liquidity peculiarities.

#### **Instrument Selection**

We describe below the five instruments used in the simulation used to create a proxy for a simplified efficient investment curve.

The first instrument reviewed for this investment portfolio is Peru's sovereign fund with maturity May 5, 2015 (see Figure 1). This bond carries an outstanding debt stock worth PEN 1.586 billion Nuevos Soles and was issued on May 5, 2005, at an original 9.91% coupon rate.

At the end of the second half of 2011, holders (see Figure 2) of the 2015 sovereign bond were distributed

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<sup>1</sup> Vélez Pareja, I. *Decisiones empresariales bajo riesgo e incertidumbre* [Business Decisions Under Risk and Uncertain Conditions] Editorial Norma, 2003.

as follows, pursuant to the data published by the Ministry of Economy and Finance of Peru.

SECURITY DESCRIPTION		Page 1/ 1
PERU B SOBERANO PERUGB9.91 05/15 116.561/116.926 (4.94/4.84) LCPR		
ISSUER INFORMATION	IDENTIFIERS	<ul style="list-style-type: none"> <li>1) Additional Sec Info</li> <li>2) ALLQ</li> <li>3) Corporate Actions</li> <li>4) Ratings</li> <li>5) Custom Notes</li> <li>6) Identifiers</li> <li>7) Sec. Specific News</li> <li>8) Issuer Information</li> <li>9) Pricing Sources</li> <li>10) Related Securities</li> </ul>
Name PERU BONO SOBERANO	ISIN PEP01000CX67	
Type Sovereign	Peru SB05MAY15	
Market of Issue Domestic	BB Number ED9277697	
SECURITY INFORMATION	RATINGS	
Country PE Currency PEN	Moody's Baa3	
Collateral Type Sr Unsecured	S&P BBB+	
Calc Typ(1275)PERUVIAN GOVT BOND	Fitch BBB	
Maturity 5/ 5/2015 Series	DBRS BBBL	
NORMAL	ISSUE SIZE	
Coupon 9.91 Fixed	Amt Issued/Outstanding	
S/A ACT/360	PEN 1,586,627.00 (M)/	
Announcement Dt 5/ 5/05	PEN 1,586,627.00 (M)	
Int. Accrual Dt 5/ 5/05	Min Piece/Increment	
1st Settle Date 5/ 5/05	1,000.00/ 1,000.00	
1st Coupon Date 11/ 5/05	Par Amount 1,000.00	
Iss Pr 100.0000	BOOK RUNNER/EXCHANGE	
NO PROSPECTUS	LIMA	66) Send as Attachment
SOBERANOS 2005. 05MAY02025. COUPON CALCULATION DAYCOUNT: 30/360.		

Figure 1. Local currency denominated sovereign bond (2015); Source: Bloomberg.

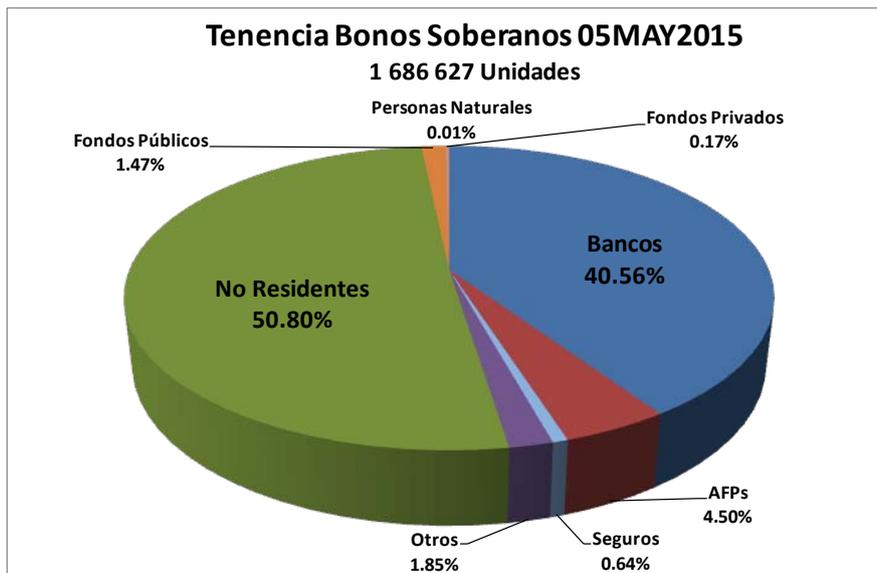


Figure 2. Sovereign bond holders (May 5, 2015)-as of June 2011.

The pie chart shows non-residents are the main creditors of the Peruvian government’s bonds due in 2005. Their share reaches 50.8%. Peruvian banks follow at 40.6%. The rationality underlying the breakdown of bond holdings is the need for foreign agents to hold paper bearing returns in local currency (Nuevo Sol) to achieve a return on funds held by non-domiciled agents in Peru with two main characteristics: a market with acceptably liquid trading and the absence of withdrawals on capital earnings’ income tax.

SECURITY DESCRIPTION		Page 1 / 1		
PERU B SOBERANO PERUGB 6.9 08/37		106.348/107.659 (6.40/6.30) LCPR		
ISSUER INFORMATION		IDENTIFIERS		
Name PERU BOND SOBERANO	ISIN PEP01000C2Z1	1) Additional Sec Info		
Type Sovereign	Peru SB12AG037	2) ALLQ		
Market of Issue Domestic	BB Number EG6650006	3) Corporate Actions		
SECURITY INFORMATION		RATINGS		
Country PE Currency PEN	Moody's Baa3	4) Ratings		
Collateral Type Sr Unsecured	Fitch BBB	5) Custom Notes		
Calc Typ(1275)PERUVIAN GOVT BOND	DBRS BBBL	6) Identifiers		
Maturity 8/12/2037 Series	Composite BBB-	7) Fees/Restrictions		
NORMAL	ISSUE SIZE		8) Sec. Specific News	
Coupon 6.9 Fixed	Amt Issued/Outstanding	9) Involved Parties		
S/A ACT/360	PEN 4,750,000.00 (M)	10) Issuer Information		
Announcement Dt 7/19/07	PEN 4,750,000.00 (M)	11) Pricing Sources		
Int. Accrual Dt 7/26/07	Min Piece/Increment	12) Related Securities		
1st Settle Date 7/26/07	1,000.00/ 1,000.00			
1st Coupon Date 2/12/08	Par Amount 1,000.00			
Iss Pr 100.0000	BOOK RUNNER/EXCHANGE			
NO PROSPECTUS	CITI			
LONG 1ST CPN. COUPON CALCULATION DAYCOUNT: 30/360.	LIMA	66) Send as Attachment		

Figure 3. Local currency-denominated sovereign bonds (2037); Source: Bloomberg.

The second instrument under consideration for our portfolio model for Peru is the sovereign bond with maturity date August 12, 2037 (see Figure 3).

Compared with the previous bond, this is one of the longest-term available holdings in the Peruvian yield curve. This characteristic allows adopting more aggressive strategies for portfolio investments.

The bond was issued on July 26, 2007 and to date 4.75 billion Nuevos Soles have still been outstanding. The original coupon rate was 6.9%.

At the end of the second half of 2011, sovereign 2037 (see Figure 4) bond holdings were distributed as follows, as shown by data from the Ministry of Economy and Finance.

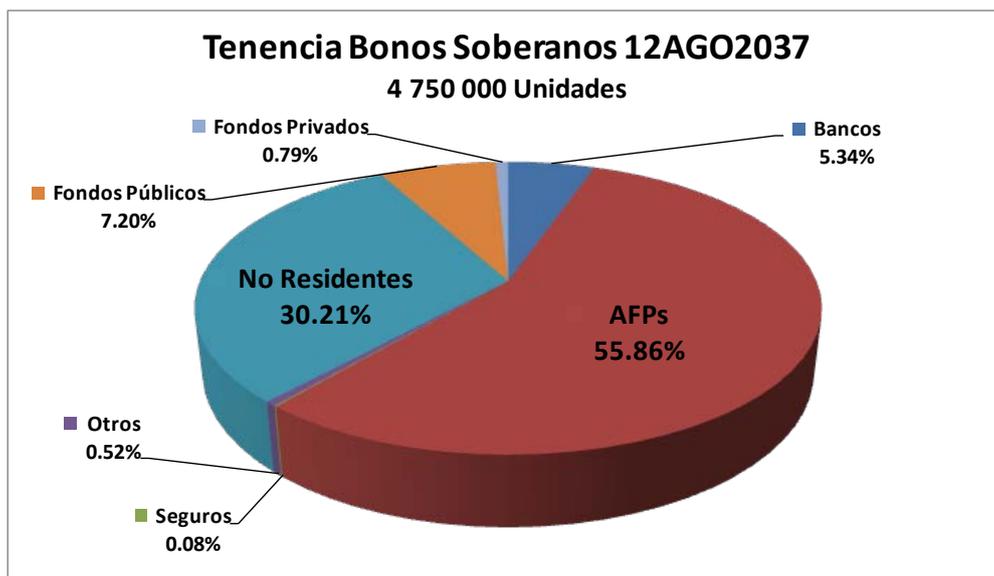


Figure 4. Sovereign bond holdings, August 12, 2037-as of June 2011.

The main holders of the Peruvian government 2037 bond are Peruvian Private Pension Funds with 55.86%

share. Non-resident investors rank next, with 30.21% share. The rest of the issue is split among other Peruvian institutional investors.

The investment rationale behind the 2037 bonds is not directly linked to bond face yields because of the carry trade. Rather, the rationale for holding these bonds combines the above factor and a bet on an improvement in Peru's credit rating, and a more aggressive investment strategy focusing on the bond's duration.

The third financial instrument under review is Peru's Exchange Traded Fund (ETF)—EPU (see Figure 5). Its nature, creation, redemption, administrator, the reasons why it was created, and the advantages it provides to the investors are explained below.

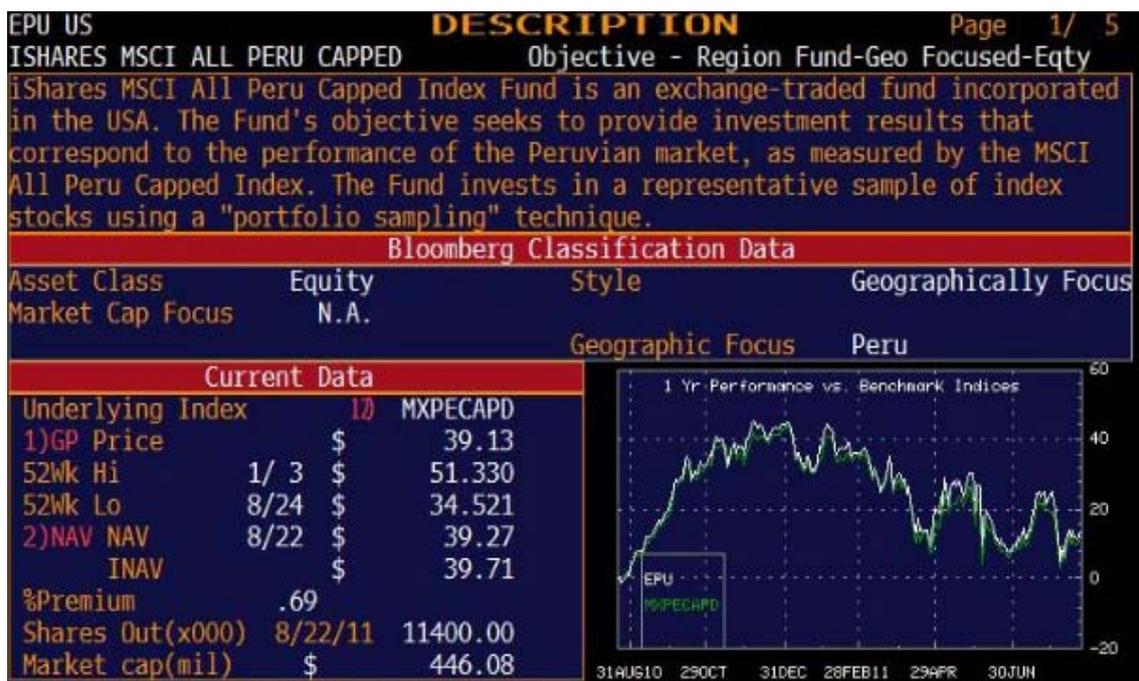


Figure 5. ISHARES MCSI details.

Peru's EPU (Peru's ETF<sup>2</sup>) is a fund aiming at replicating the behavior of the Peruvian equity market. Its outstanding USD 446 million meets kind-in creation and kind-in redemption criteria. In other words, any sophisticated, IT-capable brokerage can create and liquidate EPU's after registering with the corresponding administration fund, making EPU more liquid efficient than any other instrument reviewed for this portfolio.

The first significant characteristic of EPU is its objective to replicate exclusively Peru's equity market. The chart below (see Figure 6) shows a 99.96% concentration on stocks.

By sectors, mining accounts for 52.98% of holdings, reflecting the importance of the mining industry in Peruvian exports and the Growth Domestic Product. Other significant sectors are banking (16%) and food (7%). As regards concentration of stocks, Buenaventura and Banco de Crédito (Credicorp) fill significant EPU positions, at 17.37% and 13.567%, respectively.

The fourth selected instrument is Banco de Crédito del Perú's ADRs (see Figure 7), one of the most

<sup>2</sup> Retrieved from [http://www.us.ishares.com/product\\_info/fund/distributions/EPU.htm](http://www.us.ishares.com/product_info/fund/distributions/EPU.htm).

significant stocks in Peru’s exchange market, where they are highly traded.

These ADRs represent a wide range of financial products and account for a relatively large share of the local market’s total capitalization.

ISHARES MSCI ALL PERU CAPPED		Objective - Region Fund-Geo Focused-Eqty			
Asset Allocation as of	7/29/11	Top 10 Holdings	7/29/11	Position	% Net
Government	.00%	Cia de Minas Buenavent		2159319	17.372
Corporate	.00%	Credicorp Ltd		706664	13.567
Mortgage	.00%	Southern Copper Corp		1775544	11.919
Preferred	.00%	Alicorp SA		12356327	5.294
Municipal	.00%	Minsur SA		17228276	4.760
Equity	99.96%	Sociedad Minera Cerro		510403	4.453
Cash and Other	.04%	Volcan Cia Minera SAA		19123334	4.392
		Hochschild Mining PLC		2795110	4.325
		Grana y Montero SA		9151649	3.973
		Intergroup Financial S		664723	3.497
		5)MHD			
Sector/Geo Allocation		Portfolio Statistics			
Mining	52.98	Top 10 Hldgs % Port	73.55	Avg P/E	10.86
Banks	16.00	Median Market Cap	4.06BLN	Avg P/C	10.20
Food	7.01	Avg Wtd Mkt Cap	8.27BLN	Avg P/S	.91
Holding Companies-Divers	3.97	Avg Div Yield	2.98	Avg P/B	2.89
Electric	3.55				
Building Materials	3.54				
Peru	86.78				
U.S.	11.92				
Ireland	1.26				
		Creation Unit			
		Estimated Cash	9122.87	Total Cash	9150.87

Figure 6. ISHARES MCSI breakdown; Source: Bloomberg.

DESCRIPTION		Page 1/10	
<b>BAP US</b>	CREDICORP LTD	Commer Banks Non-US	
BBGID	BBG000FKX7Z8	98) Generate Report	
Credicorp Limited is a holding company for Banco de Credito del Peru, El Pacifico-Peruano Suiza Insurance Company and Atlantic Security Holding Corporation, among others. Credicorp provides a full range of financial services including commercial banking, corporate finance, brokerage services, asset management, trust and insurance.			
STOCK DATA		DIVIDENDS	
1)GPO	Price	92.36	2)DVD Indicated Gross Yld
	52wk High	12/ 7/2010 128.70	Dividend Growth 5YR
	52wk Low	8/11/2011 80.79	Ex-Date Type
	YTD change	-26.55	4/15/11 Reg. Cash
	YTD % Change	-22.33%	Amt
			1.95
SHARES		EARNINGS	
2)FA	Shares Out	6/20/2011 79.761M	3)ERN Ann Date
	Market Cap	USD 7366.77M	11/10/11 (Est)
	Float	40.21M	4)E Trailing 12mo EPS
	Short Int	1.153M	7.980
3)TRA	1 Yr Total Return	-6.58%	5)EE Est EPS
	BETA vs. SPX	.88	12/2011
			P/E
			11.57 LT Growth
4)OMON	Options avail & Stk Marginable		Est P/E
			10.92 Est PEG
			.49

Figure 7. Banco de Crédito del Perú’s ADRs.

The authors chose to review Banco de Crédito del Peru’s ADRs for this portfolio to include a market

efficiency criterion as a characteristic of this portfolio's instrument. They are traded in US dollars. A subsequent section examines the implications of exchange rate risk, and the need to ensure a uniform and simplified yield in local currency. As this analysis was being prepared (August 23, 2011), Banco de Crédito's market value reached 7.366 billion, and its floating stock (ADRs) was worth 79.76 million.

The fifth and last instrument under review is Compañía de Minas Buenaventura (see Figure 8), also traded as New York market ADRs. For the same reasons as BAP, it is a major instrument in Peru's stock market.

Buenaventura is a Peruvian mining holding corporation with shares in other major local mining conglomerates, though the opposite is not true. Thus, it is a fully locally-owned company focusing on gold exploitation.

DESCRIPTION				Page 1/3	
<b>BVN US</b>		CIA DE MINAS BUENAVENTUR-ADR		Gold Mining	
BBGID BBG000GPXR82 CUSIP 204448104		98) Generate Report			
Cia de Minas Buenaventura S.A. explores for, mines, and processes gold, silver, zinc, and other metals. The Company operates mines in Peru, a lime plant, an electric power transmission company, and an engineering services company. Buenaventura also markets metal concentrates to smelters internationally.					
ISSUE DATA	USD	DIVIDENDS	Semi-Annual	USD	
OGPO Price	44.71	DDVD Indicated Gross Yld		1.48%	
52Wk High 11/ 9/2010	57.20	Dividend Growth 5YR		19.62%	
52Wk Low 6/ 8/2011	35.33	Ex-Date Type		Amt	
YTD change	-4.25	4/11/11 Reg. Cash		.316438	
YTD % Change	-8.68%				
DATA	USD	EARNINGS	USD		
QFA Shares Out 8/15/2011	274.890M	QERN Ann Date	10/28/11 (Est)		
QMSH Market Cap	USD 12323.62M				
Short Interest	2.633M				
QTRA 1 Yr Total Return	20.17%	QEE Est EPS	12/2011	3.751	
BETA vs. SPX	.85	P/E	Est P/E	11.92	
QOMON Options avail & Stk Marginable		EPS Yr change		11.88%	
1 ADR REPRESENTS 1 ORDINARY SHARES OF {BUENAVCT PE Equity DFS <GO>}					

Figure 8. Compañía de Minas Buenaventura's ADRs.

As of the date for this analysis (August 23, 2011), Buenaventura's ADRs market value reached USD12.323 billion distributed among 274.9 million shares.

Having profiled the five instruments chosen for modeling, the authors now describe the individual and collective statistical peculiarities of these stocks. This choice was made for reasons of convenience and designed by both Rosa and Gabriela, who sought to create highly diversified portfolio comprised of innovative instruments from emerging markets.

### Variance and Co-variance Matrix

The price sampling of the selected instruments starts on July 1, 2010 and ends on August 23, 2011. Time series data include daily percent price changes for each of the financial assets so as to meet the two following conditions of cancelling possible spurious relationships and root units within each analysis variable, and secondly, providing a more intuitive content to daily variations in the form of capital gains/losses.

As is already mentioned, the selected instruments include:

- Cía Minera Buenaventura ADR (code BVN);

- Credicorp (code BAP);
- ISHARES Instrument (EPU);
- Peruvian Government Sovereign Bonds (code S2015);
- Peruvian Government Sovereign Bonds (code S2037).

The authors present the below graphs showing the evolution over time of the daily percent (see figure 9) fluctuations of the financial instruments under review.

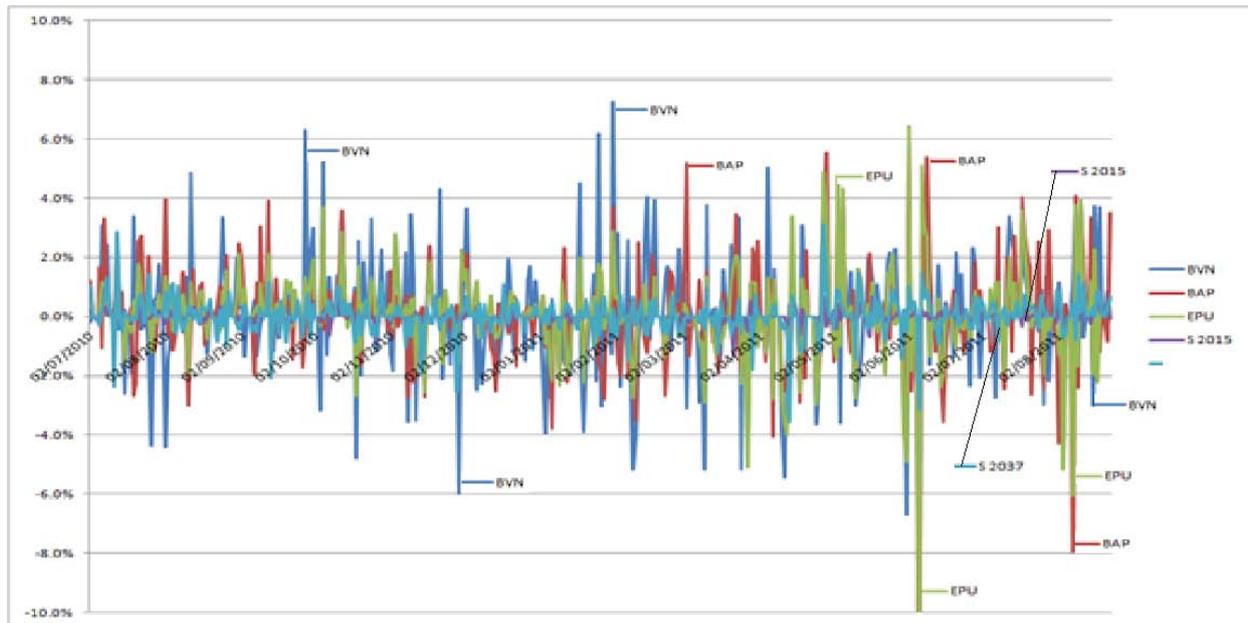


Figure 9. VAR evolution of the instruments selected.

Although the conclusions that may be drawn from this graph are limited, the authors can still hold BVN and EPU showed the widest daily price fluctuations.

The authors analyze below the variances and co-variances (see Table 1) of the financial instruments under review.

Table 1

Variance and Co Variance Matrix of the Instruments Selected

	BVN	BAP	EPU	S 2015	S 2037
BVN	0.0410%				
BAP	0.0179%	0.0328%			
EPU	0.0218%	0.0212%	0.0229%		
S 2015	0.0005%	0.0005%	0.0006%	0.0004%	
S 2037	0.0020%	0.0034%	0.0029%	0.0006%	0.0037%

For the period under review, stocks and EPU show the greatest fluctuations and risk, when compared with fixed income assets. Only BVN and EPU recorded significant co-variance levels, since BVN appears as the asset with the greatest weight in the ETF.

### Total Return and Risk Stimulation

The following chart shows the total return from capital gains for all selected financial assets for the period under review, as well as their respective standard deviations.

**EXPECTED RETURN:** An average is used i.e., the arithmetic summation of data divided by the number of data extracted from a historical database.

$$E(r) = \frac{\sum_{i=1}^n r_i}{n}$$

where:

$n$ : number of data;

$r_i$ : returns of rates in period  $n$ .

**VARIANCE:** The difference between a value from the database and the expected or average value for that same set of data.

$$\sigma^2 = \frac{\sum_{i=1}^n (r_i - E(r))^2}{n}$$

**STANDARD DEVIATION:** SD is the square root of the variance and is regarded as the basic risk measurement because it assesses both positive and negative deviations similarly. We assume a normal distribution on yields (percentages).

$$\sigma = \sqrt{\sigma^2}$$

**COVARIANCE:** A statistical value measuring the relationship between two random variables, or how the yields of two financial instruments or assets  $c$  and  $d$ , “move together”. A positive value reveals both moves in the same direction, while a negative value reflects movements in opposite directions. A value close to zero reveals little or no relationship at all.

$$COV_{A,B} = \frac{\sum_{i=1}^n (r_A - E(r_A)) \cdot (r_B - E(r_B))}{n}$$

**CORRELATION:** This statistical measure reflects the degree to which two variables are related on a linear basis. The correlation coefficient measures the association between two variables, and the positive or negative direction is shown. A correlation coefficient has values between -1 and 1.

$$-1 < \rho_{A,B} < 1 \quad \rho_{A,B} = \frac{COV_{A,B}}{\sigma_A \cdot \sigma_B}$$

After reviewing the main statistical tools, we present below the values of these statistics for the time period under review (see Table 2).

Table 2

#### Variance and Average Matrix of the Instruments Selected

	BVN	BAP	EPU	S 2015	S 2037
Var	0.041%	0.033%	0.023%	0.000%	0.004%
Average	0.065%	0.023%	0.054%	-0.006%	0.022%

As may be drawn from the above, capital gain returns are not high. In fact, carry trade resulted in larger yields from fixed income instruments during the period under examination. Assuming investors bought both types of bonds, the total return from the 2015 sovereign bond reached  $-0.006\% + 9.91\%$  in annual terms. Likewise, the 2037 sovereign bond yielded  $0.022\% + 6.90\%$ . With these total returns including capital gains and carry trade gains we can create alternative optimum portfolios.

We may start with the following expected corrected returns:

*BVN 0.065%; BAP 0.023%; EPU 0.054%; S2015 9.90%; S2037 6.922%*

To estimate the behavior of the chosen fixed income and equity instrument allocation, the authors assume that from a 1% fixed income allocation, 50% would be invested in the 2015 sovereign bonds, and the remaining 50% in the 2037 bond. Alternatively, a 1% equity allocation would be distributed among BVN, BAP, and EPU in equal 33% shares. Based on this assumption, the following graph shows the likely scenarios:

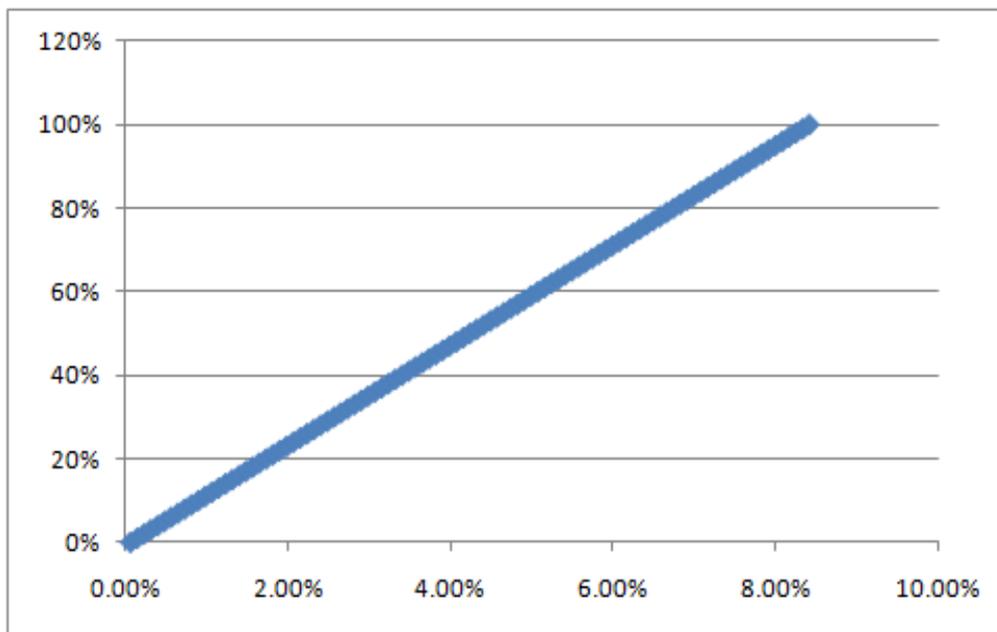


Figure 10. Capital market line.

This graph (see Figure 10) shows the greatest risk is found in stock and ETF volatility which is not compensated by the instrument's yield. The reason is that an overall decline in short term yields from equity assets. Each additional percent point in return rate free contributes significantly to the total portfolio's yield. The assumption of the portfolio efficiency curve does not hold for Peru.

The following graph showed (Figure 11) the information of the prices per instrument:

Gaby and Rosa have a hypothesis and it is that a stock's short term performance does not result in the possibility of creating optimum investment portfolios. Because of poor and even negative yields, it is better to hold a fixed income portfolio, rather than accept equity portfolio volatility and low expected yields. Consequently, the approach of possible yield scenarios does not hold for markets showing persistent stock volatility. Otherwise, when the expectation of a trend to stock price revaluation disappears in a low growth scenario, it is always preferable to hold a portfolio of fixed income instruments, even if globally stock indexes have historically yielded higher returns in the long term.

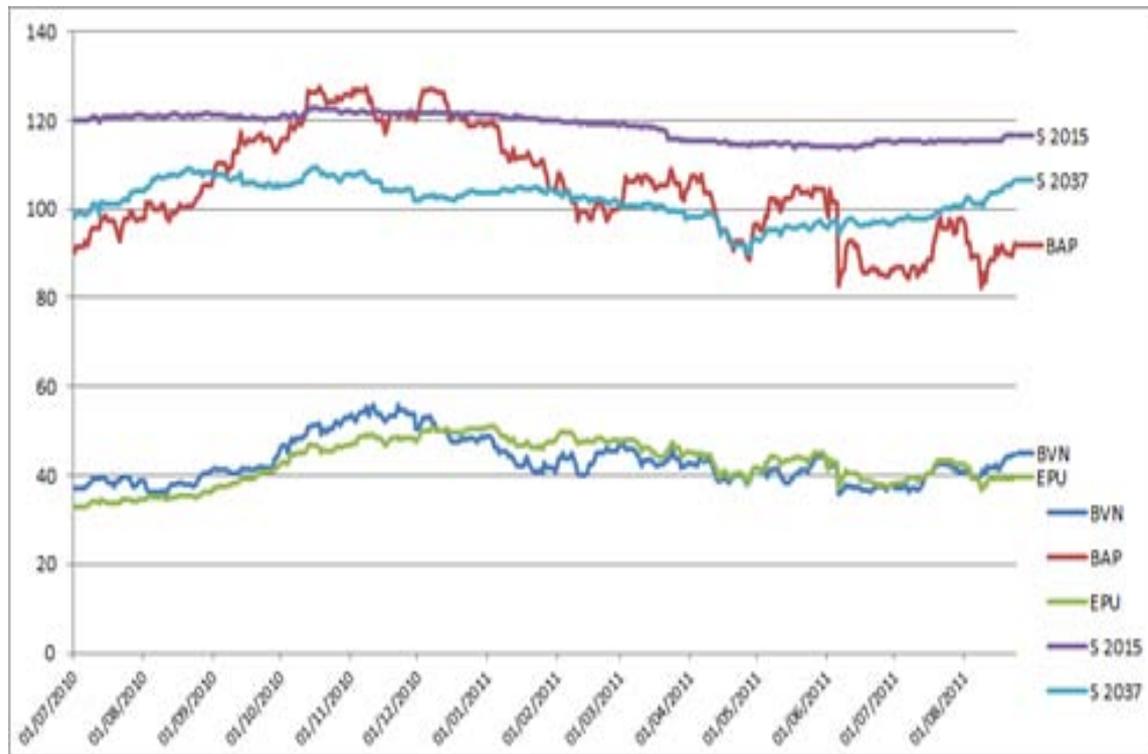


Figure 11. Prices per instrument.

### Conclusion

(1) Based on the portfolio analyzed, diversifying the portfolio reduces the standard deviation (risk measure) and invest in ETF is a positive alternative because its equity combination is more valuable and has less volatility if we compare it with a simple equity.

(2) The Stock exchange integration among Chile, Colombia, and Peru will be a very powerful tool in order to diversify portfolios and if this effort includes more countries such as Mexico, the net contribution to the investor will be positive because it could increase the turn over and liquidity of the markets. Besides, the exchange rate should be analyzed in order to guarantee the settlement of the transactions.

(3) Identifying the most important risks became a significant process that all the investors have to follow, because it allows them to consider the impact of the rate and price (market risk), bid and ask tendency (liquidity risk), settlement and internal process (operational risk), credit rating and credit line with counterparts (credit risk), and one of the most important risks, reputational risk.

(4) The information becomes one of the most significant assets when an investor decides to invest, because the information reduces several risks and it is used to calculate or try to calculate some tendencies using GARCH or order methods. But it is important to indicate that predicting a market is so difficult that it is better to have a clear investment policy in order to reduce negative impact (using stop loss aspects for instance) and obtain gains with positive tendencies (selling and reinvesting with the portfolio have positive return).

### Drafting the Report

Gabriela and Rosa spent some time thinking about the portfolio, the instruments that they had analyzed did

not provided a significant return, so they are interested in evaluating other alternatives and focus on short term instruments instead of long term instruments. They consider that the return in Latam currencies (*an important factor to consider in the MILA process in order to assure the settlement and, because usually the exchange rate, it is part of the monetary policy and each country has different "currency regulation" so, including the exchange rate will be a path to develop in the future, considering the local standards for MILA*) and interest rate could be higher than the return investing in G-7 countries (currencies or interest rates), according to the studies done by several economists in past three years and it could generate "carry trade". In fact, Gabriela and Rosa thought that there were assets that their portfolio should have in order to mitigate the market risks.

(1) Present the major risks that they have to consider evaluating each new instrument showed in the Appendixes A1, A2, and A3.

(2) Identify Gabriela and Rosa's key priorities (short- and/or long term) and discuss the strategy to attain them.

(3) Determine the returns and standard deviation of each asset showed in Appendixes A1, A2, and A4. What do you recommend and why?

Gabriela and Rosa feel confident that the new portfolio could open a new opportunities in the New York labor market to them, so they are going to prepare several alternatives to show in the next corporate meeting.

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## Appendix A

Table A1

*Information of Peruvian Market*

Date	Exchange rate peru	Overnight rate (%)	Libor rate (%)				
		Term	Term				
		1	1	3	6	9	12
1-Jul-11	2.7470	3.50	0.185	0.246	0.397	0.565	0.735
4-Jul-11	2.7490	3.50	0.185	0.246	0.397	0.564	0.735
5-Jul-11	2.7500	3.50	0.185	0.246	0.397	0.564	0.735
6-Jul-11	2.7490	3.50	0.185	0.246	0.399	0.565	0.735
7-Jul-11	2.7440	3.50	0.186	0.246	0.399	0.565	0.735
8-Jul-11	2.7440	3.50	0.186	0.246	0.399	0.567	0.736
11-Jul-11	2.7450	3.50	0.186	0.246	0.403	0.567	0.735
12-Jul-11	2.7420	3.50	0.187	0.249	0.410	0.575	0.741
13-Jul-11	2.7420	3.50	0.187	0.249	0.413	0.577	0.743
14-Jul-11	2.7410	3.50	0.186	0.250	0.416	0.578	0.743
15-Jul-11	2.7420	3.50	0.187	0.250	0.417	0.578	0.744
18-Jul-11	2.7380	3.40	0.186	0.251	0.420	0.583	0.749
19-Jul-11	2.7370	3.40	0.186	0.252	0.423	0.585	0.750
20-Jul-11	2.7380	3.40	0.187	0.253	0.423	0.585	0.751
21-Jul-11	2.7360	3.40	0.187	0.253	0.424	0.585	0.752
22-Jul-11	2.7370	3.40	0.187	0.253	0.423	0.584	0.752
25-Jul-11	2.7370	3.40	0.187	0.252	0.425	0.584	0.754
26-Jul-11	2.7370	3.40	0.187	0.253	0.425	0.583	0.755
27-Jul-11	2.7380	3.45	0.187	0.253	0.426	0.585	0.756
28-Jul-11	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday
29-Jul-11	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday
1-Aug-11	2.7430	3.45	0.192	0.257	0.432	0.593	0.759
2-Aug-11	2.7440	3.45	0.201	0.264	0.438	0.598	0.763
3-Aug-11	2.7430	3.45	0.206	0.268	0.440	0.602	0.765
4-Aug-11	2.7420	3.45	0.205	0.269	0.441	0.603	0.766
5-Aug-11	2.7420	3.45	0.206	0.272	0.443	0.604	0.765
8-Aug-11	2.7530	3.45	0.206	0.275	0.443	0.605	0.767
9-Aug-11	2.7480	3.45	0.208	0.278	0.448	0.608	0.770
10-Aug-11	2.7520	3.45	0.207	0.281	0.448	0.607	0.767
11-Aug-11	2.7450	3.45	0.207	0.286	0.452	0.609	0.770
12-Aug-11	2.7410	3.45	0.208	0.290	0.457	0.613	0.773
15-Aug-11	2.7420	3.45	0.210	0.292	0.459	0.617	0.775
16-Aug-11	2.7410	3.45	0.210	0.293	0.460	0.618	0.776
17-Aug-11	2.7380	3.45	0.212	0.296	0.460	0.618	0.778
18-Aug-11	2.7390	3.30	0.213	0.298	0.463	0.621	0.780
19-Aug-11	2.7350	3.30	0.215	0.303	0.467	0.624	0.784
22-Aug-11	2.7320	3.30	0.217	0.308	0.471	0.628	0.788
23-Aug-11	2.7320	3.30	0.218	0.312	0.475	0.633	0.792
24-Aug-11	2.7320	3.30	0.219	0.314	0.476	0.635	0.795
25-Aug-11	2.7320	3.30	0.221	0.319	0.480	0.638	0.798

(Table A1 continued)

Date	Exchange rate peru	Overnight rate (%)	Libor rate (%)				
		Term	Term				
		1	1	3	6	9	12
26-Aug-11	2.7310	3.30	0.221	0.323	0.480	0.636	0.796
29-Aug-11	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday
30-Aug-11	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday
31-Aug-11	2.7260	3.30	0.222	0.327	0.486	0.640	0.800
1-Sep-11	2.7270	3.30	0.222	0.329	0.489	0.643	0.802
2-Sep-11	2.7300	3.30	0.222	0.331	0.490	0.644	0.803
5-Sep-11	2.7310	3.30	0.224	0.333	0.496	0.648	0.807
6-Sep-11	2.7300	3.30	0.226	0.336	0.502	0.653	0.814
7-Sep-11	2.7260	3.25	0.226	0.337	0.503	0.656	0.815
8-Sep-11	2.7250	3.25	0.225	0.337	0.504	0.658	0.818
9-Sep-11	2.7270	3.45	0.226	0.338	0.504	0.651	0.821
12-Sep-11	2.7280	3.25	0.229	0.343	0.513	0.667	0.828
13-Sep-11	2.7350	3.25	0.229	0.347	0.517	0.670	0.831
14-Sep-11	2.7310	3.25	0.229	0.349	0.521	0.673	0.834
15-Sep-11	2.7310	3.25	0.230	0.350	0.522	0.674	0.836
16-Sep-11	2.7320	3.45	0.231	0.351	0.523	0.673	0.835
19-Sep-11	2.7380	3.45	0.231	0.353	0.525	0.675	0.836
20-Sep-11	2.7410	3.40	0.232	0.355	0.527	0.676	0.837
21-Sep-11	2.7480	3.40	0.234	0.356	0.529	0.678	0.839
22-Sep-11	2.7770	3.40	0.235	0.358	0.537	0.685	0.845

Note. Source: SBS, BCRP, Scotiabank, Bloomberg, Reuters.

Table A2

## Information of MILA and Latin America Countries

DATE	CLOSE PRICE				
	Colombia	Chile	Brasil	México	Perú
1-Jul-11	1762.500	465.2500	1.5599	11.7230	2.750
4-Jul-11	Holiday	465.5000	1.5580	11.6368	2.750
5-Jul-11	1770.000	464.5000	1.5637	11.5925	2.746
6-Jul-11	1766.000	463.7500	1.5662	11.6194	2.744
7-Jul-11	1760.900	460.9000	1.5581	11.6544	2.743
8-Jul-11	1760.450	462.8500	1.5634	11.5738	2.743
11-Jul-11	1770.000	467.0000	1.5796	11.6337	2.742
12-Jul-11	1766.200	466.8500	1.5773	11.7274	2.742
13-Jul-11	1757.300	462.6500	1.5762	11.7867	2.742
14-Jul-11	1747.650	462.1500	1.5729	11.7170	2.740
15-Jul-11	1759.850	462.4000	1.5743	11.7010	2.738
18-Jul-11	1757.500	463.3500	1.5828	11.7178	2.738
19-Jul-11	1757.250	461.9000	1.5691	11.7877	2.736
20-Jul-11	Holiday	463.0000	1.5651	11.6964	2.737
21-Jul-11	1754.000	460.9000	1.5567	11.6638	2.736

(Table A2 continued)

DATE	CLOSE PRICE				
	Colombia	Chile	Brasil	México	Perú
22-Jul-11	1755.800	461.4700	1.5547	11.6174	2.736
25-Jul-11	1763.500	462.7000	1.5449	11.6393	2.741
26-Jul-11	1758.700	457.5000	1.5345	11.6641	2.736
27-Jul-11	1767.500	456.8000	1.5639	11.6172	2.741
28-Jul-11	1773.000	455.7600	1.5651	11.6527	Holiday
29-Jul-11	1779.000	458.7000	1.5563	11.6821	Holiday
1-Aug-11	1767.100	457.0000	1.5551	11.7425	2.743
2-Aug-11	1771.150	458.9000	1.5656	11.7514	2.742
3-Aug-11	1771.250	458.5000	1.5651	11.7657	2.742
4-Aug-11	1786.000	462.1500	1.5752	11.8473	2.742
5-Aug-11	1789.300	465.2000	1.5895	11.9523	2.743
8-Aug-11	1815.500	472.6000	1.5999	11.9794	2.754
9-Aug-11	1812.500	473.0000	1.6334	12.1845	2.749
10-Aug-11	1796.000	473.3000	1.6183	12.3710	2.750
11-Aug-11	1788.800	471.1000	1.6306	12.3221	2.745
12-Aug-11	1785.050	470.5000	1.6157	12.3899	2.743
15-Aug-11	Holiday	Holiday	1.5956	12.2992	2.740
16-Aug-11	1775.100	472.0000	1.5918	12.2424	2.741
17-Aug-11	1766.350	466.4500	1.5830	12.2631	2.736
18-Aug-11	1777.500	470.5000	1.6062	12.1651	2.738
19-Aug-11	1783.000	468.6000	1.5960	12.3685	2.733
22-Aug-11	1780.000	468.4000	1.6009	12.2386	2.733
23-Aug-11	1789.000	467.2500	1.6036	12.2948	2.732
24-Aug-11	1786.010	467.0000	1.6039	12.3357	2.733
25-Aug-11	1790.900	466.9500	1.6154	12.3952	2.731
26-Aug-11	1794.350	465.8500	1.6114	12.4259	2.730
29-Aug-11	1790.300	464.9000	1.5974	12.4953	Holiday
30-Aug-11	1789.000	465.0500	1.5904	12.4148	Holiday
31-Aug-11	1782.500	461.0500	1.5872	12.4838	2.727
1-Sep-11	1779.500	459.6100	1.6040	12.3480	2.729
2-Sep-11	1783.000	459.8000	1.6343	12.2616	2.729
5-Sep-11	1782.800	462.8000	1.6522	12.3735	2.735
6-Sep-11	1791.200	464.2500	1.6583	12.5353	2.727
7-Sep-11	1790.000	462.8000	Holiday	12.5102	2.725
8-Sep-11	1788.500	462.6600	1.6566	12.4661	2.724
9-Sep-11	1798.000	469.4000	1.6774	12.4956	2.728
12-Sep-11	1821.000	476.0000	1.6899	12.6324	2.734
13-Sep-11	1813.480	475.1000	1.7127	12.7687	2.730
14-Sep-11	1826.500	478.8000	1.7288	12.8994	2.732
15-Sep-11	1820.100	478.1500	1.7106	12.9646	2.729

(Table A2 continued)

DATE	CLOSE PRICE				
	Colombia	Chile	Brasil	México	Perú
16-Sep-11	1821.450	480.5000	1.7122	Holiday	2.734
19-Sep-11	1857.000	Holiday	1.7763	12.9127	2.740
20-Sep-11	1860.500	489.8000	1.7870	13.1860	2.735
21-Sep-11	1874.000	499.9000	1.8280	13.1669	2.758
22-Sep-11	1915.000	523.1000	1.9016	13.4045	2.771

Note. Source: BVC, BEC, BCB, DOF.

Table A3

## G 7 Currencies Open Prices

DATE	G7 CURRENCY							
	OPEN PRICE							
	EUR/USD	EUR/GBP	EUR/JPY	EUR/CAD	GBP/USD	USD/CAD	USD/JPY	GBP/JPY
1-Jul-11	1.4509/1.4510	0.9034/0.9035	117.38/117.40	1.3962/1.3964	1.6061/1.6062	0.9604/0.9605	80.90/80.91	129.92/129.95
4-Jul-11	1.4510/1.4510	0.9031/0.9032	117.30/117.32	1.3917/1.3919	1.6065/1.6067	0.9611/0.9613	80.84/80.85	129.88/129.90
5-Jul-11	1.4476/1.4476	0.8985/0.8987	117.33/117.35	1.3929/1.3932	1.6109/1.6110	0.9621/0.9622	81.05/81.06	130.57/130.59
6-Jul-11	1.4333/1.4333	0.8945/0.8946	115.92/115.93	1.3830/1.3833	1.6021/1.6022	0.9658/0.9660	80.87/80.88	129.58/129.60
7-Jul-11	1.4337/1.4338	0.8971/0.8972	116.48/116.49	1.3738/1.3738	1.5980/1.5982	0.9583/0.9584	81.24/81.25	129.83/129.85
8-Jul-11	1.4318/1.4319	0.8931/0.8932	115.44/115.46	1.3645/1.3645	1.6031/1.6032	0.9627/0.9629	80.63/80.64	129.25/129.27
11-Jul-11	1.4073/1.4076	0.8832/0.8835	113.13/113.16	1.3625/1.3627	1.5933/1.5933	0.9659/0.9662	80.39/80.42	128.05/128.11
12-Jul-11	1.3977/1.3980	0.8811/0.8813	111.33/111.33	1.3584/1.3584	1.5863/1.5866	0.9681/0.9684	79.62/79.65	126.33/126.36
13-Jul-11	1.4137/1.4139	0.8783/0.8785	117.65/117.68	1.3520/1.3522	1.6102/1.6105	0.9592/0.9592	78.81/78.85	127.19/127.21
14-Jul-11	1.4244/1.4247	0.8818/0.8821	112.63/112.66	1.3597/1.3600	1.6151/1.6154	0.9571/0.9573	79.06/79.09	127.69/127.75
15-Jul-11	1.4130/1.4150	0.8731/0.8751	111.89/112.01	1.3538/1.3540	1.608/1.614	0.9651/0.9655	78.15/78.17	125.18/125.22
18-Jul-11	1.4029/1.4050	0.8730/0.8740	110.66/111.67	1.3461/1.3465	1.6015/1.6020	0.9543/0.9550	77.25/77.32	120.35/120.38
19-Jul-11	1.4164/1.4167	0.8772/0.8775	111.81/111.83	1.3532/1.3534	1.6145/1.6148	0.9505/0.9508	78.91/78.94	127.43/127.46
20-Jul-11	1.4181/1.4184	0.8799/0.8802	111.89/111.92	1.3449/1.3451	1.6114/1.6117	0.9484/0.9487	78.89/78.92	127.12/127.18
21-Jul-11	1.4323/1.4326	0.8812/0.8815	112.57/112.60	1.3445/1.3447	1.6252/1.6255	0.9451/0.9454	78.58/78.61	127.71/127.77
22-Jul-11	1.4333/1.4336	0.8807/0.8810	112.45/112.48	1.3655/1.3658	1.6272/1.6275	0.9512/0.9515	78.44/78.47	127.64/127.70
25-Jul-11	1.4351/1.4354	0.8811/0.8814	112.17/112.20	1.3597/1.3599	1.6285/1.6288	0.9462/0.9465	78.15/78.18	127.26/127.32
26-Jul-11	1.4461/1.4464	0.8823/0.8826	112.86/112.89	1.3619/1.3623	1.6388/1.6391	0.9433/0.9436	78.03/78.06	127.88/128.94
27-Jul-11	1.4431/1.4434	0.8813/0.8816	112.33/112.36	1.3621/1.3625	1.6372/1.6375	0.9427/0.9431	77.83/77.86	127.42/127.48
28-Jul-11	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday
29-Jul-11	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday
1-Aug-11	1.4235/1.4238	0.8732/0.8738	109.87/109.90	1.3706/1.3709	1.6278/1.6280	0.9560/0.9563	77.17/77.19	125.65/125.69
2-Aug-11	1.4241/1.4244	0.8753/0.8756	109.99/110.02	1.3618/1.3620	1.6267/1.6271	0.9575/0.9578	77.22/77.25	125.61/125.67
3-Aug-11	1.4299/1.4302	0.8728/0.8731	110.02/110.05	1.3720/1.3724	1.6381/1.6384	0.9602/0.9605	76.98/76.96	126.01/126.07
4-Aug-11	1.4169/1.4172	0.8671/0.8674	112.11/112.14	1.3825/1.3829	1.6339/1.6342	0.9702/0.9705	79.11/79.14	129.26/129.32
5-Aug-11	1.4193/1.4196	0.8681/0.8683	111.36/111.39	1.3891/1.3899	1.6349/1.6352	0.9802/0.9805	78.45/78.48	128.25/128.31
8-Aug-11	1.4230/1.4233	0.8699/0.8702	110.31/110.33	1.4025/1.4029	1.6355/1.6358	0.9888/0.9891	77.51/77.54	126.76/126.82
9-Aug-11	1.4250/1.4253	0.8728/0.8731	110.11/110.14	1.4139/1.4143	1.6323/1.6326	0.9935/0.9938	77.26/77.29	126.11/126.17
10-Aug-11	1.4229/1.4232	0.8796/0.8799	108.76/108.79	1.4131/1.4133	1.6174/1.6177	0.9876/0.9879	76.42/76.45	123.62/123.66
11-Aug-11	1.4219/1.4222	0.8773/0.8776	109.12/109.15	1.4087/1.4091	1.6205/1.6208	0.9930/0.9933	76.73/76.76	124.34/124.40

(Table A3 continued)

DATE	G7 CURRENCY							
	OPEN PRICE							
	EUR/USD	EUR/GBP	EUR/JPY	EUR/CAD	GBP/USD	USD/CAD	USD/JPY	GBP/JPY
12-Aug-11	1.4271/1.4274	0.8759/0.8762	109.39/109.41	1.4059/1.4063	1.6290/1.6293	0.9856/0.9859	76.64/76.67	124.85/124.91
15-Aug-11	1.4404/1.4407	0.8807/0.8810	110.40/110.43	1.4110/1.4112	1.6354/1.6357	0.9853/0.9856	76.63/76.66	125.32/125.38
16-Aug-11	1.4391/1.4394	0.8779/0.8782	110.60/110.63	1.4162/1.4165	1.6388/1.6391	0.9828/0.9831	76.85/76.88	125.94/126.00
17-Aug-11	1.4486/1.4489	0.8781/0.8784	110.84/110.87	1.4165/1.4167	1.6494/1.6497	0.9789/0.9792	76.50/76.53	126.18/126.24
18-Aug-11	1.4336/1.4339	0.8687/0.8690	109.82/109.85	1.4170/1.4175	1.6502/1.6506	0.9909/0.9912	76.59/76.62	126.39/126.45
19-Aug-11	1.4414/1.4417	0.8697/0.8701	110.14/110.17	1.4185/1.4189	1.6570/1.6573	0.9871/0.9874	76.40/76.43	126.61/126.66
22-Aug-11	1.4419/1.4422	0.8739/0.8742	110.67/110.69	1.4190/1.4194	1.6498/1.6501	0.9856/0.9860	76.73/76.76	126.59/126.65
23-Aug-11	1.4390/1.4393	0.8711/0.8714	110.16/110.19	1.4257/1.4260	1.6517/1.6520	0.9883/0.9886	76.54/76.57	126.42/126.48
24-Aug-11	1.4468/1.4471	0.8794/0.8797	110.71/110.74	1.4262/1.4266	1.6450/1.6453	0.9855/0.9858	76.51/76.54	125.86/125.92
25-Aug-11	1.4432/1.4435	0.8824/0.8827	111.24/111.27	1.4215/1.4219	1.6353/1.6356	0.9807/0.9810	77.07/77.11	126.04/126.10
26-Aug-11	1.4408/1.4411	0.8861/0.8864	110.41/110.44	1.4239/1.4241	1.6259/1.6262	0.9902/0.9905	76.62/76.65	124.56/124.62
29-Aug-11	1.4536/1.4539	0.8852/0.8855	111.61/111.65	1.4154/1.4157	1.6418/1.6421	0.9760/0.9763	76.77/76.80	126.05/126.11
30-Aug-11	1.4222/1.4225	0.8805/0.8808	110.12/110.15	1.4098/1.4101	1.6637/1.6642	0.9540/0.9544	74.55/74.60	124.45/124.49
31-Aug-11	1.4438/1.4441	0.8845/0.8848	110.56/110.59	1.4138/1.4141	1.6323/1.6326	0.9756/0.9759	76.56/76.59	124.97/125.03
1-Sep-11	1.4238/1.4241	0.8815/0.8818	109.79/109.82	1.3950/1.3954	1.6151/1.6154	0.9757/0.9760	77.10/77.13	124.52/124.58
2-Sep-11	1.4198/1.4201	0.8772/0.8775	109.04/109.07	1.3941/1.3944	1.6182/1.6185	0.9819/0.9822	76.79/76.82	124.26/124.32
5-Sep-11	1.4105/1.4108	0.8751/0.8754	108.48/108.51	1.3964/1.3968	1.6116/1.6119	0.9891/0.9894	76.89/76.92	123.92/123.98
6-Sep-11	1.4041/1.4044	0.8759/0.8762	108.83/108.86	1.3989/1.3992	1.6028/1.6031	0.9946/0.9949	77.49/77.52	124.21/124.27
7-Sep-11	1.4013/1.4016	0.8774/0.8777	108.39/108.42	1.3874/1.3877	1.5968/1.5971	0.9893/0.9896	77.34/77.37	123.49/123.55
8-Sep-11	1.4003/1.4006	0.8713/0.8716	108.30/108.33	1.3821/1.3825	1.6068/1.6071	0.9836/0.9839	77.33/77.36	124.25/124.31
9-Sep-11	1.3691/1.3694	0.8620/0.8623	106.44/106.47	1.3715/1.3718	1.5880/1.5883	0.9957/0.9960	77.74/77.77	123.45/123.51
12-Sep-11	1.3611/1.3614	0.8606/0.8609	105.10/105.13	1.3665/1.3668	1.5814/1.5817	0.9960/0.9963	77.20/77.23	122.08/122.14
13-Sep-11	1.3686/1.3689	0.8648/0.8651	105.16/105.19	1.3541/1.3545	1.5824/1.5827	0.9910/0.9913	76.82/76.85	121.56/121.62
14-Sep-11	1.3695/1.3698	0.8675/0.8678	105.06/105.09	1.3579/1.3583	1.5785/1.5788	0.9910/0.9913	76.70/76.73	121.07/121.13
15-Sep-11	1.3880/1.3883	0.8759/0.8762	106.55/106.58	1.3630/1.3635	1.5843/1.5846	0.9847/0.9850	76.75/76.78	121.59/121.65
16-Sep-11	1.3800/1.3803	0.8727/0.8730	105.93/105.96	1.3559/1.3562	1.5810/1.5813	0.9834/0.9837	76.75/76.78	121.34/121.40
19-Sep-11	1.3613/1.3616	0.8693/0.8696	104.52/104.55	1.3420/1.3423	1.5657/1.5660	0.9897/0.9900	76.77/76.80	120.20/120.26
20-Sep-11	1.3684/1.3687	0.8765/0.8768	104.48/104.51	1.3590/1.3594	1.5610/1.5613	0.9989/0.9992	76.34/76.37	119.17/119.23
21-Sep-11	1.3684/1.3687	0.8765/0.8768	104.48/104.51	1.3590/1.3594	1.5610/1.5613	0.9989/0.9992	76.34/76.37	119.17/119.23
22-Sep-11	1.3468/1.3471	0.8771/0.8774	102.73/102.76	1.3891/1.3894	1.5353/1.5356	1.0292/1.0295	76.27/76.30	117.11/117.17

Note. Source: Several platforms.

Table A4

## G 7 Currencies Close Prices

DATE	G7 CURRENCY							
	CLOSE PRICE							
	EUR/USD	EUR/GBP	EUR/JPY	EUR/CAD	GBP/USD	USD/CAD	USD/JPY	GBP/JPY
1-Jul-11	1.4512/1.4515	0.9030/0.9032	117.43/117.46	1.3967/1.3969	1.6064/1.6065	0.9600/0.9602	80.93/80.94	129.97/129.99
4-Jul-11	1.4512/1.4512	0.9033/0.9034	117.28/117.29	1.3921/1.3923	1.6062/1.6064	0.9615/0.9617	80.87/80.89	129.79/129.84
5-Jul-11	1.4408/1.4409	0.8976/0.8978	116.76/116.78	1.3924/1.3927	1.6049/1.6051	0.9626/0.9627	81.04/81.05	130.06/130.08
6-Jul-11	1.4304/1.4305	0.8946/0.8948	115.74/115.76	1.3835/1.3837	1.5987/1.5989	0.9654/0.9656	80.92/80.92	129.36/129.39
7-Jul-11	1.4355/1.4356	0.8990/0.8991	116.60/116.62	1.3736/1.3736	1.5967/1.5968	0.9587/0.9588	81.22/81.23	129.69/129.72
8-Jul-11	1.4244/1.4076	0.8887/0.8888	114.87/114.88	1.3647/1.3647	1.6026/1.6027	0.9615/0.9616	80.64/80.65	129.23/129.26
11-Jul-11	1.4022/1.4023	0.8811/0.8814	112.36/112.39	1.3615/1.3618	1.5909/1.5912	0.9684/0.9687	80.13/80.16	127.48/127.54
12-Jul-11	1.3982/1.3985	0.8812/0.8814	111.29/111.31	1.3580/1.3582	1.5860/1.5862	0.9679/0.9680	79.59/79.61	126.27/126.30
13-Jul-11	1.4142/1.4145	0.8778/0.8781	117.71/117.73	1.3525/1.3527	1.6108/1.6111	0.9594/0.9597	78.97/79.00	127.24/127.26
14-Jul-11	1.4141/1.4144	0.8762/0.8765	111.81/111.84	1.3603/1.3605	1.6136/1.6139	0.9593/0.9596	79.06/79.09	127.57/127.63
15-Jul-11	1.4170/1.4190	0.8778/0.8780	112.35/112.35	1.3543/1.3549	1.614/1.618	0.9659/0.9662	78.08/78.11	125.25/125.32
18-Jul-11	1.4139/1.4142	0.8790/0.8800	111.69/111.72	1.3469/1.3472	1.6127/1.6130	0.9634/0.9637	77.35/77.39	120.44/120.49
19-Jul-11	1.4155/1.4158	0.8763/0.8765	111.85/111.85	1.3525/1.3528	1.6151/1.6154	0.9511/0.9514	78.77/78.81	127.49/127.53
20-Jul-11	1.4171/1.4175	0.8805/0.8807	111.95/111.97	1.3438/1.3440	1.6111/1.6115	0.9489/0.9491	78.91/78.94	127.20/127.25
21-Jul-11	1.4328/1.4330	0.8807/0.8809	112.62/112.65	1.3441/1.3443	1.6247/1.6249	0.9456/0.9458	78.63/78.66	127.80/127.82
22-Jul-11	1.4338/1.4341	0.8812/0.8815	112.39/112.42	1.3660/1.3662	1.6269/1.6270	0.9517/0.9518	78.50/78.52	127.71/127.76
25-Jul-11	1.4387/1.4391	0.8821/0.8824	112.55/112.58	1.3607/1.3612	1.6307/1.6310	0.9446/0.9449	78.22/78.25	127.55/127.61
26-Jul-11	1.4515/1.4518	0.8843/0.8846	113.08/113.11	1.3611/1.3615	1.6412/1.6415	0.9428/0.9431	77.90/77.93	127.84/128.90
27-Jul-11	1.4441/1.4444	0.8815/0.8818	112.12/112.18	1.3626/1.3629	1.6385/1.6388	0.9444/0.9447	77.25/77.30	127.51/127.56
28-Jul-11	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday
29-Jul-11	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday	Holiday
1-Aug-11	1.4240/1.4243	0.8744/0.8747	109.95/109.98	1.3710/1.3713	1.6283/1.6286	0.9568/0.9571	77.21/77.23	125.72/125.76
2-Aug-11	1.4185/1.4188	0.8709/0.8712	109.42/109.45	1.3622/1.3625	1.6286/1.6289	0.9600/0.9603	77.12/77.15	125.62/125.66
3-Aug-11	1.4314/1.4317	0.8718/0.8721	110.06/110.09	1.3728/1.3730	1.6415/1.6418	0.9634/0.9637	76.88/76.91	126.21/126.26
4-Aug-11	1.4133/1.4136	0.8684/0.8687	110.06/110.09	1.3832/1.3835	1.6271/1.6274	0.9780/0.9783	78.92/78.95	128.41/128.47
5-Aug-11	1.4288/1.4291	0.8726/0.8729	112.08/112.11	1.3903/1.3905	1.6371/1.6374	0.9783/0.9786	78.43/78.46	128.39/128.45
8-Aug-11	1.4203/1.4206	0.8682/0.8685	110.39/110.42	1.4032/1.4035	1.6356/1.6359	0.9912/0.9915	77.71/77.74	127.07/127.13
9-Aug-11	1.4228/1.4231	0.8770/0.8773	109.33/109.36	1.4132/1.4136	1.6221/1.6224	0.9940/0.9943	76.83/76.86	124.63/124.69
10-Aug-11	1.4229/1.4232	0.8802/0.8805	109.23/109.26	1.4139/1.4142	1.6164/1.6167	0.9887/0.9891	76.75/76.78	124.06/124.12
11-Aug-11	1.4213/1.4216	0.8767/0.8770	109.22/109.25	1.4083/1.4085	1.6208/1.6211	0.9894/0.9897	76.84/76.87	124.54/124.60
12-Aug-11	1.4234/1.4237	0.8744/0.8747	109.32/109.35	1.4065/1.4067	1.6277/1.6280	0.9913/0.9916	76.79/76.82	124.99/125.05
15-Aug-11	1.4443/1.4446	0.8813/0.8816	110.87/110.90	1.4113/1.4115	1.6386/1.6389	0.9817/0.9821	76.75/76.78	125.76/125.82
16-Aug-11	1.4406/1.4409	0.8751/0.8754	110.59/110.62	1.4157/1.4160	1.6459/1.6462	0.9829/0.9832	76.75/76.78	126.32/126.38
17-Aug-11	1.4446/1.4449	0.8721/0.8724	110.46/110.49	1.4160/1.4163	1.6562/1.6565	0.9807/0.9811	76.46/76.49	126.64/126.70
18-Aug-11	1.4329/1.4332	0.8688/0.8691	109.66/109.69	1.4165/1.4168	1.6491/1.6494	0.9901/0.9904	76.52/76.55	126.19/126.25

(Table A4 continued)

DATE	G7 CURRENCY							
	CLOSE PRICE							
	EUR/USD	EUR/GBP	EUR/JPY	EUR/CAD	GBP/USD	USD/CAD	USD/JPY	GBP/JPY
19-Aug-11	1.4384/1.4387	0.8721/0.8724	110.08/110.11	1.4180/1.4183	1.6489/1.6492	0.9888/0.9891	76.51/76.54	126.17/126.23
22-Aug-11	1.4371/1.4374	0.8723/0.8726	110.29/110.32	1.4125/1.4129	1.6472/1.6475	0.9888/0.9891	76.73/76.76	126.39/126.45
23-Aug-11	1.4425/1.4428	0.8741/0.8744	110.61/110.64	1.4248/1.4252	1.6501/1.6504	0.9892/0.9895	76.67/76.70	126.51/126.57
24-Aug-11	1.4469/1.4472	0.8805/0.8808	111.00/111.03	1.4249/1.4254	1.6373/1.6376	0.9884/0.9887	76.97/77.01	126.03/126.09
25-Aug-11	1.4371/1.4374	0.8825/0.8828	111.52/111.55	1.4207/1.4210	1.6282/1.6285	0.9862/0.9865	77.59/77.62	126.33/126.39
26-Aug-11	1.4479/1.4482	0.8858/0.8861	111.05/111.08	1.4235/1.4239	1.6342/1.6345	0.9848/0.9851	76.69/76.72	125.33/125.39
29-Aug-11	1.4528/1.4530	0.8848/0.8850	111.47/111.52	1.4160/1.4162	1.6425/1.6429	0.9767/0.9769	76.48/76.50	126.18/126.21
30-Aug-11	1.4227/1.4229	0.8810/0.8813	110.04/110.08	1.4110/1.4114	1.6645/1.6649	0.9537/0.9539	74.64/74.68	124.53/124.57
31-Aug-11	1.4444/1.4447	0.8836/0.8839	110.62/110.65	1.4129/1.4134	1.6332/1.6335	0.9750/0.9754	76.62/76.65	125.10/125.13
1-Sep-11	1.4275/1.4278	0.8822/0.8825	109.64/109.67	1.3942/1.3946	1.6178/1.6181	0.9753/0.9756	76.80/76.83	124.24/124.30
2-Sep-11	1.4186/1.4189	0.8749/0.8752	108.85/108.88	1.3934/1.3939	1.6211/1.6214	0.9841/0.9844	76.72/76.75	124.37/124.43
5-Sep-11	1.4091/1.4094	0.8753/0.8756	108.34/109.37	1.3922/1.3925	1.6097/1.6100	0.9909/0.9912	76.87/76.90	123.74/123.80
6-Sep-11	1.3999/1.4002	0.8777/0.8780	108.60/108.63	1.3972/1.3975	1.5948/1.5951	0.9893/0.9896	77.57/77.60	123.71/123.77
7-Sep-11	1.4084/1.4087	0.8814/0.8817	108.92/108.95	1.3865/1.3869	1.5976/1.5979	0.9861/0.9864	77.32/77.35	123.53/123.59
8-Sep-11	1.3901/1.3904	0.8702/0.8705	107.67/107.70	1.3814/1.3819	1.5973/1.5976	0.9885/0.9888	77.44/77.47	123.69/123.75
9-Sep-11	1.3659/1.3662	0.8606/0.8609	105.73/105.76	1.3706/1.3710	1.5869/1.5872	0.9972/0.9975	77.40/77.43	122.82/122.88
12-Sep-11	1.3617/1.3619	0.8611/0.8615	105.05/105.08	1.3669/1.3672	1.5810/1.5813	0.9965/0.9967	77.26/77.30	122.18/122.22
13-Sep-11	1.3729/1.3732	0.8678/0.8681	105.49/105.52	1.3532/1.3538	1.5819/1.5822	0.9872/0.9875	76.83/76.86	121.53/121.59
14-Sep-11	1.3752/1.3755	0.8715/0.8718	105.43/105.46	1.3580/1.3584	1.5777/1.5780	0.9898/0.9901	76.65/76.68	120.94/121.00
15-Sep-11	1.3872/1.3875	0.8766/0.8770	106.65/106.69	1.3618/1.3624	1.5851/1.5855	0.9856/0.9860	76.63/76.66	121.42/121.46
16-Sep-11	1.3808/1.3811	0.8733/0.8736	105.78/105.79	1.3542/1.3546	1.5818/1.5820	0.9842/0.9845	76.69/76.72	121.29/121.32
19-Sep-11	1.3681/1.3684	0.8713/0.8716	104.62/104.65	1.3140/1.3147	1.5697/1.5700	0.9897/0.9900	76.47/76.50	120.03/120.09
20-Sep-11	1.3673/1.3676	0.8773/0.8776	104.78/104.81	1.3582/1.3586	1.5583/1.5586	1.0034/1.0037	76.62/76.65	119.40/119.46
21-Sep-11	1.3673/1.3676	0.8773/0.8776	104.78/104.81	1.3582/1.3586	1.5583/1.5586	1.0034/1.0037	76.62/76.65	119.40/119.46
22-Sep-11	1.3453/1.3456	0.8767/0.8770	102.75/102.78	1.3883/1.3886	1.5343/1.5346	1.0298/1.0301	76.36/76.39	117.15/117.21

Note. Source: Several platforms.